Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims.

Claim 1. (Canceled)

Claim 2. (Currently Amended) A method for the linearization of frequency-modulated continuous wave (FMCW) radar devices having a non-linear, ramp shaped, modulated transmitter frequency progression x(t) comprising the steps of:

correcting a phase term on a receiver side of a FMCW radar device said correction for compensating a phase error in a reception signal q(t) which further comprises the following steps:

selecting a number (L) of consecutive ramp-shaped reception sequences $q_k(n)$ of the reception signal, wherein said number is predetermined with k=1,...,L;

representing a set of phases $\arg\{q_k(n)\}$ which are represented as a polynomial of an N^{th} order for a time index n, with a polynomial coefficient m_ℓ, with ℓ=1,...,N,;

transforming a spectrum range $Q(e^{j\Omega})$ of the selected reception sequences q(n) into a predetermined base band ~~that are predetermined~~, wherein a set of base band reception sequences $\hat{q}_k(n)$ with k=0,…,L-1 are generated in each instance;

iteratively calculating a correction phase term for partial compensation of non-linear frequency components in said base band of reception sequences $\hat{q}_k(n)$ by calculating a set of polynomial coefficients $\tilde{m}_{\ell,k}^{(i)}$ of the individual base band reception sequences $\hat{q}_k(n)$ via estimation methods, wherein $\hat{q}_k(n)$ are the sequences that have already been iteratively phase corrected, wherein said iteration is stopped once a parameter change between two consecutive iterations, which are predetermined, remains below a threshold ε which is predetermined.

Claim 3. (Previously Presented) The method as in claim 2, wherein said step of calculating polynomial coefficients, includes using said coefficients $\tilde{m}_{\ell,k}^{(i)}$ which includes estimating a distance $\tilde{R}_k^{(i)}$ between a radar device

emitting a transmission signal x(t) and an object reflecting a transmission signal x(t).

Claim 4. (Previously Presented) The method as in claim 2, wherein said step of iteratively calculating a correlation phase term comprises the steps of:

calculating an individual discrete Fourier transformation $\hat{Q}_k^{(i)}(\mu)$ of the base band reception sequences $\hat{q}_k^{(i)}(n)$ whereby $\hat{Q}_k^{(i)}(u) = FFT\{\hat{q}_k^{(i)}(n)\}$ for k=1,...,L

calculating filtered base band reception sequences $\bar{q}_k^i(\mu)$ by means of a band pass filter according to $\bar{Q}_k^{(i)}(\mu) = w(\mu)\hat{Q}_k^{(i)}(\mu)$ wherein w(μ) is a spectrum window that ~~can~~ is predetermined and indicates a range of a spectrum window having a μ_{max} that is predetermined wherein $\mu \in [\mu_\mu, \mu_l]$ with a low limit μ_u that is predetermined and an upper limit μ_l that is predetermined;

calculating an individual inverse Fourier transformation $\overline{q}_k^{(i)}(n)$ of a filtered base band reception sequence $\overline{Q}_k^{(i)}(\mu)$ wherein $\overline{q}_k^{(i)}n = IFFT\{\overline{Q}_k^{(i)}(\mu)\}$ for k=1,...., L;

estimating at least one distance $\widetilde{R}_k^{(i)}$ by means of a maximum likelihood estimation method;

calculating a polynomial coefficient $\widetilde{m}_{\ell,k}^{(i)}$ from the estimated distances $\widetilde{R}_k^{(i)}$;

averaging of said polynomial coefficient $\widetilde{m}_{\ell,k}^{(i)}$ with ℓ=1,..., N over L reception sequences $\hat{q}_k$ with k=1,..., L;

averaging a set of distances $\overline{R}_k^{(i)}$ over L reception sequences $\hat{q}_k(n)$;

calculating the reception sequences $\hat{q}_k^{(i+1)}$ (n) with the averaged, estimated polynomial coefficients $\widetilde{m}_\ell^{(i)}$ as the starting point for the next iteration.

Claim 5. (Previously Presented) The method as in claim 2, wherein said iteration step is stopped upon reaching a predetermined number of iteration steps.

Claim 6. (Previously Presented) The method as in claim 4, wherein said iteration step is stopped if a condition $\left|R^{(i-1)} - R^{(i)}\right| < \varepsilon$ is reached with ε being a threshold that is predetermined.

Claim 7. (Previously Presented) The method as in claim 6, further comprising the step of calculating a set of final estimate values $\widetilde{R},\widetilde{m}_\ell$ via the following formula

$$\widetilde{R} = R^{(i)}; \widetilde{m}_\ell = \frac{1}{\widetilde{R}^{(i)}} \sum_{i=1}^{I} \widetilde{R}^{(i)} \widetilde{m}_\ell^{(i)} .$$

Claim 8. (Previously Presented) The method as in claim 4, wherein said spectrum window is a rectangular window or a Hamming window.

Claim 9. (Previously Presented) The method as in claim 5, wherein a position of a center point μ_{max} of a spectrum window corresponds to a maximum amount of FFT

$\left|\hat{Q}_k^{(l)}(\mu)\right|$ generated by averaging of an amount FFT of a base band reception sequence $\left|\hat{Q}^{(l)}(\mu_{max})\right|$ over a number L.

Claim 10. (Previously Presented) The method as in claim 2, wherein said reception signal is mixed with said transmission frequency into a lower frequency position that is predetermined.

Claim 11. (Previously Presented) The method as in claim 4, wherein after said step of base band transformation, the method further comprises the step of reducing a scanning cycle T_A of a ramp signal $q_k(n)$, wherein the ramp signals $q_k(n)$ are filtered by means of an Antialias low-pass.

Claim 12. (Previously Presented) The method as in claim 11, wherein scanning cycle T_A, is reduced by a factor K which lies between K=30 and K=60.

Claim 13. (Previously Presented) The method as in claim 5, wherein said number of predetermined iterations, is between 10 and 20 iterations.